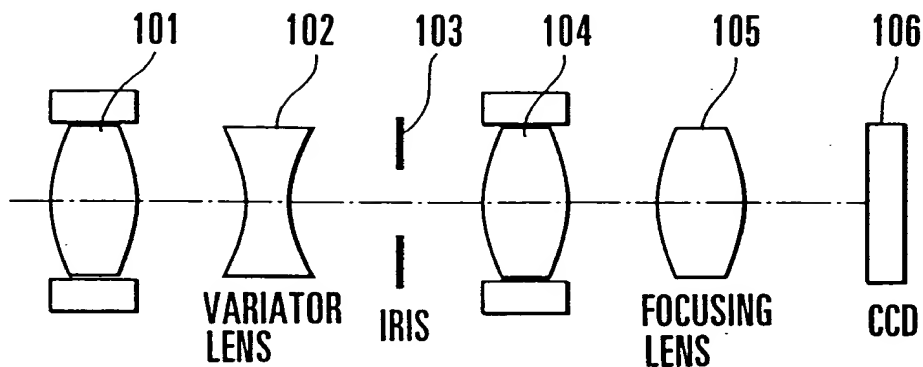# FIG. 2 (Prior Art)

FIG. 3 (Prior Art)
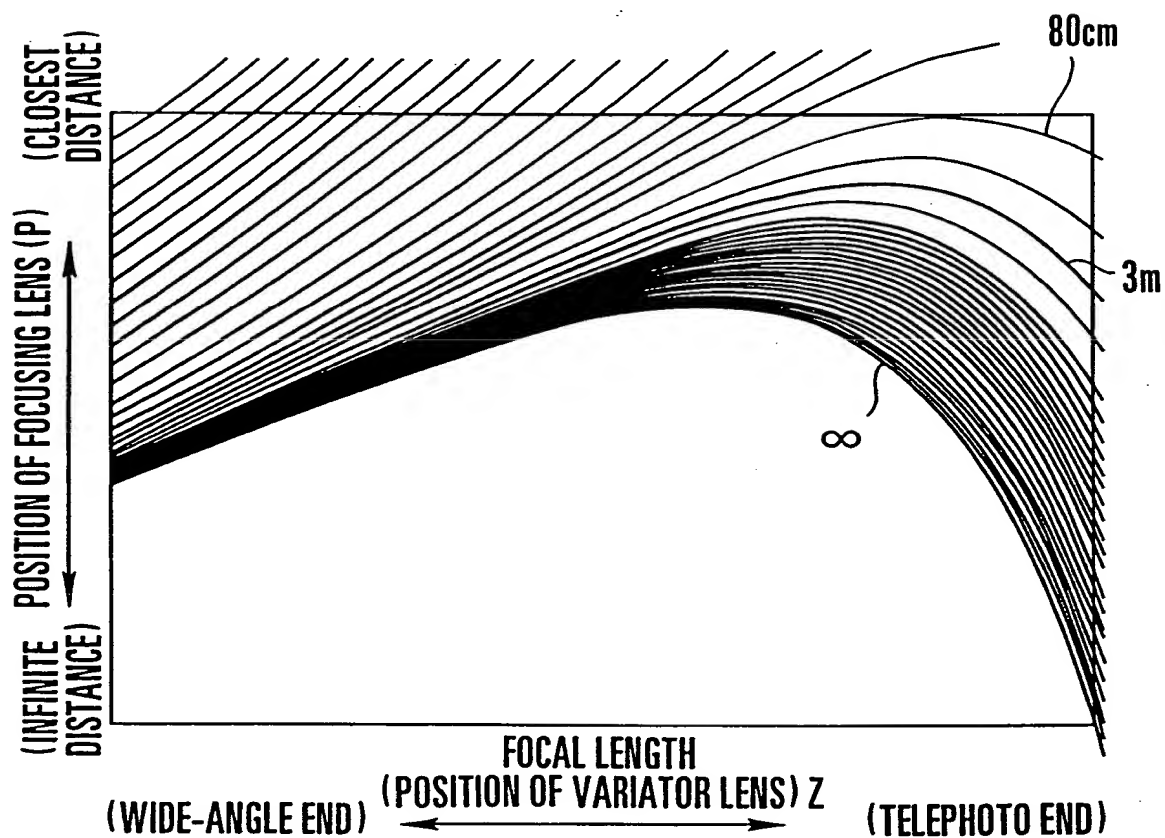
F I G. 4
(Prior Art)
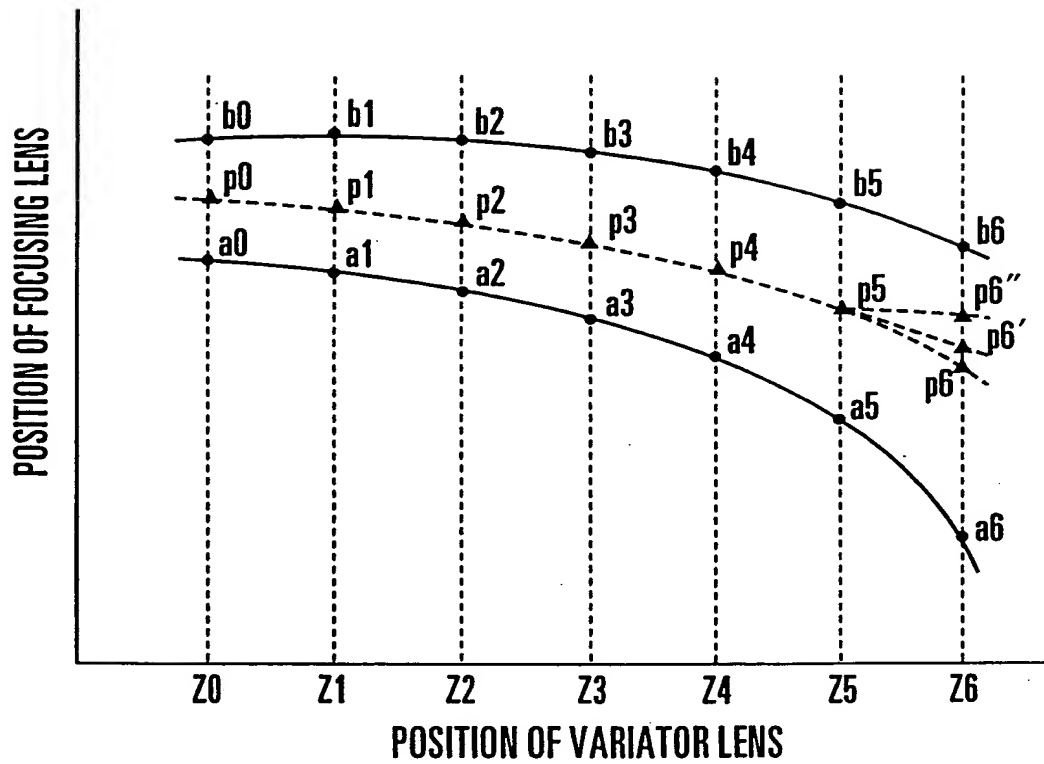
F I G. 5
(Prior Art)
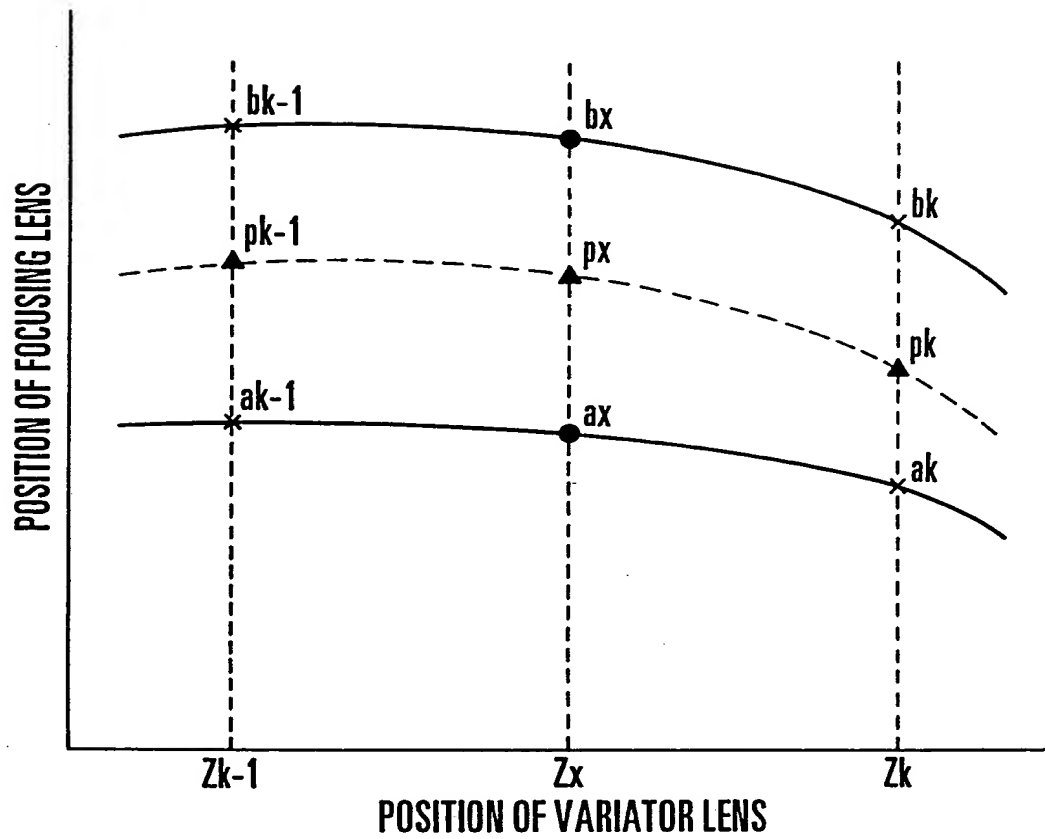
$$ax = ak - \frac{(Zk - Zx)(ak - ak\text{-}1)}{(Zk - Zk\text{-}1)}$$

$$bx = bk - \frac{(Zk - Zx)(bk - bk\text{-}1)}{(Zk - Zk\text{-}1)}$$

F I G. 6(A)
(Prior Art)

603 601 602

MAXIMUM VALUE
MINIMUM VALUE
TH1

AF EVALUATION
SIGNAL

F I G. 6(B)
(Prior Art)

604

605

Vf0+Vf−

Vf0+Vf+

Vf0+Vf−

Vf0+Vf+

Vf0+Vf−

Vf0+Vf+

Vf0+Vf−

Vf0+Vf+

Vf0+Vf−

Vf0+Vf+

Vf0

Vf0+Vf+

Vf0↓

606

CLOSEST
DISTANCE

POSITION OF
FOCUSING LENS

INFINITE
DISTANCE

Z0 Z1 Z2 Z3 Z4 Z5 Z6 Z7 Z8 Z9 Z10 Z11 Z12 Z13 Z14 Z15 Z16

W   POSITION OF VARIATOR LENS   T

F I G. 7 (Prior Art)

```
        ┌─────────────┐  S1
        │    START    │
        └─────────────┘
               │
        ┌─────────────┐  S2
        │ INITIAL SETTING │
        └─────────────┘
               │
        ┌──────────────────────┐  S3
        │ COMMUNICATION ROUTINE │
        │ WITH SYSTEM CONTROLLER │
        └──────────────────────┘
               │
        ┌──────────────────────┐  S4
        │  AF PROCESSING ROUTINE │
        └──────────────────────┘
               │
        ┌──────────────────────┐  S5
        │ ZOOMING PROCESSING ROUTINE │
        └──────────────────────┘
               │
        ┌──────────────────────┐  S6
        │ DRIVING DIRECTION AND │
        │ SPEED SELECTING ROUTINE │
        └──────────────────────┘
               │
        ┌──────────────────────┐  S7
        │ FOCUSING AND ZOOMING │
        │ MOTOR DRIVING CONTROL │
        └──────────────────────┘
               │
               └────────────► (loop back to S3)
```

F I G. 8 (Prior Art)

START — S11

INITIAL SETTING — S12

COMMUNICATION ROUTINE WITH SYSTEM CONTROLLER — S13

AF PROCESSING ROUTINE — S14

ZOOMING PROCESSING ROUTINE — S15

DRIVING DIRECTION AND SPEED SELECTING ROUTINE — S16

FOCUSING AND ZOOMING MOTOR DRIVING CONTROL — S17

WAIT FOR A PREDETERMINED TIME ? — S18 — NO

YES

IS ZOOMING BEING EXECUTED ? — S19 — NO

YES

ZOOMING PROCESSING ROUTINE — S20

DRIVING DIRECTION AND SPEED SELECTING ROUTINE — S21

FOCUSING AND ZOOMING MOTOR DRIVING CONTROL — S22

F I G. 12
(Prior Art)

$A(n,v)$

FOCUS POSITION

∞ ⟶ CLOSEST DISTANCE

W

ZOOM POSITION

T

v \ n	0	1	2	3	$\cdots$	k	$\cdots$	m
0	A(0,0)	A(1,0)	A(2,0)	A(3,0)	$\cdots$	A(k,0)	$\cdots$	A(m,0)
1	A(0,1)	A(1,1)	A(2,1)	A(3,1)	$\cdots$	A(k,1)	$\cdots$	A(m,1)
2	A(0,2)	A(1,2)	A(2,2)	A(3,2)	$\cdots$	A(k,2)	$\cdots$	A(m,2)
3	A(0,3)	A(1,3)	A(2,3)	A(3,3)	$\cdots$	A(k,3)	$\cdots$	A(m,3)
$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$
k	A(0,k)	A(1,k)	A(2,k)	A(3,k)	$\cdots$	A(k,k)	$\cdots$	A(m,k)
$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$
s	A(0,s)	A(1,s)	A(2,s)	A(3,s)	$\cdots$	A(k,s)	$\cdots$	A(m,s)